



DEPARTMENT OF CIVIL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	Disaster Mitigation and Management		
Course Code	CE208	No. of Credits	3
Course Code of Pre-requisite subject(s)			
Session	Janary 2020	Section (if, applicable)	-
Name of Faculty	Dr. S. Saravanan	Department	Civil Engineering
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Name of Course Coordinator			
E-mail	nisha@nitt.edu	Telephone No.	
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
<p>Disaster Modelling and Management – Introduction – Definitions – Disaster, Hazards, Exposure, Vulnerability, Risk – Types of disasters – Natural and Man-made - Earth quake, Liquefaction, Landslide, Flood, Dam break, Cyclone and Tsunami, Drought and Forest fire, Chemical, industrial and accidents.</p> <p>Institutional framework - Disaster Management Act, 2005, National Disaster Management Authority (NDMA), SDMA, DDMA National Executive Committee (NEC) - National Institute of Disaster Management (NIDM), National Disaster Response Force (NDRF) - Financial Arrangements, Financing the Relief Expenditure - National Disaster Response Fund (NDRF) - Monitoring of Expenditure from Relief Funds - Disaster Response Reserve - Plan and non-plan Schemes - International co-operation on DMM.</p> <p>Disaster Management Cycle - Hazard identification - vulnerability and risk assessment - Mitigation strategies or measures - risk reduction and Infrastructure - Vulnerabilities caused by development - Soft computing tools in assessment of vulnerability and risk.</p> <p>Pre and Post disaster activities - Search and rescue (SAR) – Evacuation - Logistics and supply - Communication and information management - Emergency operations management - Survivor response and coping, Security - Livelihood Restoration - Response and Recovery - Post-disaster assessment - Relief and Rehabilitation - Reconstruction - Resilience - Disaster Recovery and Rebuilding - Mitigation strategies - Prevention and Mitigation - Measuring and Mapping Vulnerability and risk - Risk reduction strategies - Structural and Non-Structural measures - Preparedness and Planning - Mitigation Planning and Policy Strategies: Local, State, and Federal Level Capacity building - Climate Change Adaptation.</p> <p>Emergency Management Planning - Tools for risk reduction measures - early warning - Emergency exercises/training - Emergency communications systems - The Emergency Operation Plan (EOP) - Evacuations plans and training - Emergency personnel/contact lists - Role of Information, Communication and Geo-informatics Technologies in Disasters - UNOSAT's Humanitarian Rapid Mapping Service, Applications of Remote sensing and GIS in DMM.</p> <p>Case Studies and Application of DMM in Various Disasters - Risk and Vulnerability mapping for flood, landslide, drought, forest fire, Liquefaction and earthquake.</p>			

COURSE OBJECTIVES	
<ol style="list-style-type: none"> 1. Understanding of the roles of the various phases of disaster management and issues concerning planning and policies in those phases. 2. Understanding of the role of federal, state, and local governments in disaster planning and policies. 3. Understanding of comprehensive emergency management from a planning and policy perspective, mitigation planning, factors affecting short and long-term recovery and rebuilding and the role of planners and policy-makers. 4. Understanding of the factors that give rise to disaster vulnerabilities (e.g. natural, physical, social, economic, policies, and governance). 5. Knowledge and capabilities to assess and manage these vulnerabilities levels of community resilience 6. Data, methods, tools, and geospatial techniques (including GIS) that can enhance vulnerability assessments and knowledge building. 	
COURSE OUTCOMES (CO)	
By the end of this course the students	
<ol style="list-style-type: none"> 1. Understand the necessity of disaster management measures and tools 2. Get a sound knowledge on the technology involved in disaster management planning and mapping 3. Acquire knowledge on the various mitigation measures 4. Understand the effect role of communication and its effectiveness in the disaster preparedness and mitigation activity 5. Gain knowledge to develop the technical and technological measures that aid in the prevention and mitigation of disasters 	
Course Outcomes	Aligned Programme Outcomes (PO)
1. Understand the necessity of disaster management measures and tools	
2. Get a sound knowledge on the technology involved in disaster management planning and mapping	
3. Acquire knowledge on the various mitigation measures	
4. Understand the effect role of communication and its effectiveness in the disaster preparedness and mitigation activity	
5. Gain knowledge to develop the technical and technological measures that aid in the prevention and mitigation of disasters	

COURSE PLAN – PART II
COURSE OVERVIEW
<p>This course includes detailed introduction on the disaster management measures and planning strategies. The disaster management cycle is extensively discussed to provide a precise view on the various phases of the DMC. The organizations and the policies involved in the disaster management activity is elaborated. The use of technology in each phase of the disaster is explained to give better understanding on the usefulness of the technology. The course will be divided into four modules relating to planning and policy processes corresponding to these four traditional phases of disaster management. Throughout the semester, particular attention will be paid to how disaster planning and policy efforts can increase and promote resilience and reduce vulnerabilities. The adoption of GIS tools in disaster mapping and monitoring is explained with case studies.</p> <p>This course will be designed to serve as an upper level Bachelor's degree course and could be easily adapted to the graduate level with the addition of other reading materials.</p>
COURSE TEACHING AND LEARNING ACTIVITIES

S.No	Week/ Contact Hours	Topic	Mode of Delivery
1	Week 1	Introduction to Disaster Modeling and Management <ul style="list-style-type: none"> Hazard, Disaster, Exposure, Vulnerability, Risk. 	PPT & Black board
2	Week 2	Natural and Manmade Disaster <ul style="list-style-type: none"> Earth quake, Liquefaction, Landslide, Flood, Dam break, Cyclone and Tsunami, Drought and Forest fire, Chemical, industrial and accidents. 	PPT & Black board
3	Week 3	Institutional Frame work <ul style="list-style-type: none"> Disaster Management Act, 2005, National Disaster Management Authority (NDMA), SDMA, DDMA National Executive Committee (NEC), National Institute of Disaster Management (NIDM), National Disaster Response Force (NDRF). 	PPT & Black board
		Assignment 1	
4	Week 4	Institutional Frame work <ul style="list-style-type: none"> Financial Arrangements, Financing the Relief Expenditure, National Disaster Response Fund (NDRF), Monitoring of Expenditure from Relief Funds, Disaster Response Reserve, Plan and non-plan Schemes, International co-operation on DMM. 	PPT & Black board
5	Week 5	Introduction to Disaster, hazard and vulnerability <ul style="list-style-type: none"> Disaster Management Cycle, Hazard identification, vulnerability and Risk assessment, Exposure, Risk, Mitigation strategies or measures. 	PPT & Black board
6	Week 6	Introduction to Disaster, hazard and vulnerability <ul style="list-style-type: none"> Pre and Post disaster activities, risk reduction and Infrastructure, Vulnerabilities caused by development, Soft computing tools in assessment of vulnerability and risk. 	
		Assignment 2	
7	Week 7	Disaster Management Cycle-1: <ul style="list-style-type: none"> Pre and Post Disaster activities (before, during and after a disaster), Search and rescue (SAR), Evacuation, Logistics and supply, Communication and information management, 	PPT & Black board
8	Week 8	Disaster Management Cycle-1: <ul style="list-style-type: none"> Emergency operations management, Survivor response and coping, Security, Livelihood Restoration. 	PPT & Black board
9	Week 9	Disaster Management Cycle-2: <ul style="list-style-type: none"> Post-disaster recovery phase, Response and Recovery, Post-disaster assessment, Relief and Rehabilitation, Reconstruction, Resilience, Disaster Recovery and Rebuilding. 	PPT & Black board
10	Week 10	Disaster Management Cycle-3: <ul style="list-style-type: none"> Pre-Disaster activities (Mitigation and Preparedness), Disaster Mitigation, Mitigation strategies, Prevention and Mitigation, Measuring and Mapping Vulnerability and risk, Risk reduction strategies, Structural and Non-Structural measures, Preparedness and Planning, Mitigation Planning and Policy Strategies: Local, State, and Federal Level, Capacity building, Climate Change Adaptation. 	PPT & Black board
		Midterm Assessment – I	

11	Week 11	Disaster Management Cycle-3: <ul style="list-style-type: none"> Emergency Management Planning, Tools for risk reduction measures, development, early warning, Emergency exercises/training, Warning systems, Emergency communications systems, The Emergency Operation Plan (EOP), Evacuations plans and training, Emergency personnel/contact lists. 	PPT & Black board	
12	Week 12	Role of Information, Communication and Geo-informatics Technologies in Disasters <ul style="list-style-type: none"> The Role of Media in Disaster Management (DM), Mass Media, Electronic Media, Print media, Satellite Radio, Google/Facebook/Twitter and other social media role of DM, Crowd source data. UNOSAT's Humanitarian Rapid Mapping Service, Applications of Remote sensing and GIS in DMM. 	PPT & Black board	
13	Week 13	Case Studies and Application of DMM in Various Disasters <ul style="list-style-type: none"> Risk and Vulnerability mapping for flood, landslide, drought, forest fire, Liquefaction and earthquake. 	PPT & Black board	
		Compensation Assessment		
14	Week 14	Final Assessment		
COURSE ASSESSMENT METHODS (shall range from 4 to 6)				
S.No	Mode of Assessment	Week/Date	Duration	% Weightage
1	Midterm Assessment	10 th Week	1 hr	30 marks
2	Assignment-1	3 rd Week	1 week time	20 marks
3	Assignment-2	6 th Week	1 week time	20 marks
4	Compensation Assessment*	13 th Week	1 hr	30 marks
5	Final Assessment *	14 th	3 hour	30 marks
	Total			100 marks
*mandatory; refer to guidelines on page 4				
COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)				
COURSE POLICY (COMPENSATION ASSESSMENT)				
<ol style="list-style-type: none"> Attending all the assessments is MANDATORY for every student. If any student is not able to attend Assessment-1 / Assessment-2 due to genuine reason, student is permitted to attend the respective assessment as compensation assessment (CPA) with the same weightage. At any case, CPA will not be considered as an improvement test. A minimum of 30% should be scored in the end assessment for a pass. Every student is expected to score minimum 35% (i.e., 35 marks) to pass the course. Otherwise the student would be declared fail and 'F' grade will be awarded. 				
ATTENDANCE POLICY				

The attendance will be taken in all the contact hours. Students are encouraged to attend all the classes without absence. Also, the students are encouraged to participate in various co-curricular and extracurricular activities to enrich the academic / campus life.

- a) At least 75% attendance in the course is mandatory.
- b) A maximum of 10% shall be allowed under On Duty (OD) category
Students with less than 65% of attendance shall be prevented from writing the end assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY AND PLAGIARISM

Academic Dishonesty

- a) Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty
- b) Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

The department disciplinary committee constituted with the faculty member, PAC Chair person, and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student found guilty,

ADDITIONAL INFORMATION

Additional reading materials will be available (NIRDMS reports) from the course instructor.

The Course Faculty Details: Room No.: **101 (Civil- Annexure Building)**

Timings: **10 am - 5 pm.**

Email ID: **ssaravanan@nitt.edu**

Telephone No.: **0431-250-3175**

FOR APPROVAL



Dr. S. Saravanan
Course Faculty



Chairperson (Class Committee)



Dr. G. Swaminathan
HOD